1998

"VERTEBRATE PESTS OF AGRICULTURE, FORESTRY AND PUBLIC LANDS" 1998 ANNUAL MEETING

WCC-95

"VERTEBRATE PESTS OF AGRICULTURE, FORESTRY AND PUBLIC LANDS"

1998
ANNUAL MEETING

(MINUTES, ABSTRACTS, AND SELECTED SUPPLEMENTARY MATERIALS)

NOVEMBER 17-19, 1998
RENO, NEVADA

MEETING -- WCC-95 Committee
Vertebrate Pests of Agriculture, Forestry and Public Lands
November 17-19, 1998
Reno, Nevada

1998 OFFICERS

Chair:

Desley Whisson
Department of Wildlife, Fish and Conservation Biology
University of California
1 Shields Avenue
Davis, CA 95616

Vice-Chair:

Ray Sterner
USDA/APHIS/WS
National Wildlife Research Center
4101 Laporte Avenue
Ft. Collins, CO 80521-2154

Secretary:

Monty Sullins
Montana Dept. of Agriculture
321 S. 24th Street West
Billings, MT 59102

Administrative Advisor:

Grant Vest, Associate Director
Agriculture Experiment Station
Utah State University
Logan, UT 84322

Arrangements:

John O'Brien
Nevada Division of Agriculture
350 Capitol Hill Avenue
Reno, NV 89502

PROPOSED AGENDA

Tuesday, November 17

1:00-1:15 pm	Welcome and Introductions. Desley Whisson, UC Cooperative Extension, Davis, California.
1:15-1:30	Administrative Advisor Comments. Grant Vest, Utah State University Logan, Utah.

Presentations:

1:30-1:50	Operation and successes of a lethal deer removal program in suburban Chicago. Duane Etter, Illinois Natural History Survey, Champaign, Illinois.
1:50-2:10	Private Land Management of a Black-tailed Prairie Dog and Black-footed Ferret Ecosystem. Dallas Virchow, Univ. Nebraska Ag Extension Scottsbluff, Nebraska.
2:10-2:30	The Livestock Protection Collar as a primary predator control tool. Robert Timm, UC Cooperative Extension, Hopland, California.
2:30-2:50	Non-target hazard of 2% Zinc Phosphide grain bait to free-ranging ring-necked pheasants in northern California alfalfa fields. Brett Petersen, NWRC, Fort Collins, Colorado.
2:50-3:20	Break
3:20-3:40	The problem of Belding's ground squirrels in northern California. Desley Whisson, UC Cooperative Extension, Davis, California.
3:40-4:00	Comparison of spot baiting and bait stations using chlorophacinone for control of Belding's ground squirrels in Northern California. Brett Petersen, NWRC, Fort Collins, Colorado.
4:00-4:20	Capsaicin, northern pocket gophers, and behavior. Ray Sterner, NWRC, Fort Collins, Colorado.
4:20-4:40	Field trials with methyl anthranilate on sweet corn. Leonard Askam. Bird Shield Repellent Corp., Pullman, Washington.

Wednesday, November 18

8:30-10:00 am	WCC-95 Business Meeting.
10:00-10:30	Break
10:30-10:50	An update on research sponsored by the Vertebrate Pest Control Research Advisory Committee. Gerry Miller, California Department of Food and Agriculture, Sacramento, California.
10:50-11:10	Integrated pest management of vertebrates: Moving ahead. Gary Witmer, NWRC, Fort Collins, Colorado.
11:10-11:30	Proposed EPA measures for risk mitigation for aluminum phosphide. Rex Baker, California State Polytechnic University, Corona, California.
11:30-11:50	Reporting requirements for risk/benefit information pertaining to pesticide use. Shirley Wager-Page, NWRC, Riverdale, Maryland.
11:50-12:10 pm	The reregistration status of zinc phosphide and strychnine. John Eisenmann, NWRC, Fort Collins, Colorado.
12:10-1:30	Lunch
1:30-5:00	Group Discussion: . Proposal by Paul Curtis (Cornell Univ.) for WCC-95 to sponsor a NE Regional Subcommittee or Working Group. . Pesticide issues . California trap ban issues . Endangered species issues . Forestry issues . Other?

Thursday, November 19

8:30-10:00 am	Group discussion & research updates
10:00-10:30	Break
10:30-Noon	Group discussions & research updates
Noon	Adjourn

MINUTES

Number and title of the regional project:

WCC-095 Vertebrate Pests of Agriculture, Forestry and Public Lands

Location and dates of the meeting:

Reno, Nevada
November 17-19, 1998

Participants/attendees (n = 36):

Project participants

Name:	Representing:
R. Baker	California State Polytechnic University, Pomona, CA
J. Baroch	Genesis Laboratories, Inc., Fort Collins, CO
D. Freeman	RCO, Inc., Junction City, OR
P. Gorenzel	University of California, Davis, CA
T. Hagen	South Dakota Department of Agriculture, Pierre, S
B. Hazen	Wilco Distributors Inc., Lompoc, CA
W. Howard	University of California, Davis, CA
G. Miller	California Dept. of Food and Agriculture (CDFA), Sacramento, CA
J. O'brien	Nevada Division of Agriculture, Reno, NV
J. Shelgren	Cal./EPA, Sacramento, CA
R. Sterner	National Wildlife Research Center (NWRC), Fort Collins, CO
J. Steuber	USDA-APHIS-WS, Oklahoma City, OK
M. Sullins	Montana Department of Agriculture, Billings, MT
N. Svircev	HACCO Inc., Madison, WI
R. Timm	Hopland Research and Extension Center, Hopland, CA
T. Van Deelen	Illinois Natural History Survey, Champaign, IL
G. Vest	Utah State University, Logan, UT
D. Virchow	University of Nebraska Agriculture Extension, Scottsbluff, NE
D. Whisson	University of California, Davis, CA
G. Witmer	National Wildlife Research Center (NWRC), Fort Collins, CO

Attendees

Name:	Representing:
L. Askham	Bird Shield Repellent Corp., Pullman, WA
D. Bryson	Lipha Tech, Inc., Milwaukee, WI
M. Conover	Berryman Institute, Utah State University, Logan, UT
D. Etter	Illinois Natural History Survey, Champaign, IL

E. Finley	CDFA, IPC Branch San Jose, CA
D. Fox	Lipha Tech, Inc., Milwaukee, WI
J. Green	USDA, APHIS, WS, Lakewood, COD
B. Jacobs	US EPA Registration Division, Washington, DC
P. Laird	Lipha Tech, Inc., Milwaukee, WI
E. Marshall	Lipha Tech, Inc., Milwaukee, WI
B. Petersen	National Wildlife Research Center (NWRC), Fort Collins, CO
T. Salmon	University of California, Davis, CA
E. Silberhorn	Arcadis, Geraghty, & Miller, Millersville, MD
M. Symmes	Lipha Tech, Inc. Milwaukee, WI
C. Tanner	Lipha Tech, Inc. Milwaukee, WI
S. Wager Page	USDA-APHIS-PPD, Riverdale, MD

Adopted agenda:

Tuesday, November 17, 1:00-5:00 pm

Welcome, Introductions, and Agenda Update

Administrative Advisor's Comments

Presentations: Capsaicin, northern pocket gophers, and behavior. Ray Sterner

Field trials with methyl anthranilate on sweet corn and sunflowers. Leonard Askham

The Livestock Protection Collar as a primary predator control tool. Robert Timm

Non-target hazard of 2% Zinc Phosphide grain bait to free-ranging ring-necked pheasants in northern California alfalfa fields. Brett Petersen

The problem of Belding's ground squirrels in northern California. Desley Whisson

Comparison of spot baiting and bait stations using chlorophacinone for Control of Belding's ground squirrels in Northern California. Brett Petersen

Operation and success of a lethal deer removal program in suburban Chicago. Dwayne Etter

Wednesday, November 18, 8:30am - 5:00 pm

Business Meeting:

(I) Call to order
(ii) Acknowledgements and apologies
(iii) Approval of minutes from last meeting
(iv) Old business
    Next meeting (dates, location, facilities, registration fee)
    WCC-95 informational brochure
(v) New business
    Other means to advertise what WCC-95 does (web page, e-mail list server)
    Arrangements, facilities, and fees
    Report on WCC-95 annual meeting attendance
(vi) Petition for Renewal for WCC-95 Project
(vii) Request for WCC-95 to support a NE Regional Subcommittee/Working Group
(viii) Other matters, announcements, discussions
(ix) Election of officers
(x) Adjourn

Presentations:

Videos shown: 1) Pocket gopher response to capsaicin-mixed soil 2) The Eradicator (a drop-panel rodent trap: Perpetual Concepts, Campbell, CA). Ray Sterner

An update on research sponsored by the Vertebrate Pest Control Research Advisory Committee. Gerry Miller

Integrated pest management of vertebrates: Moving ahead. Gary Witmer

Proposed EPA measures for risk mitigation for aluminum phosphide. Rex Baker.

Reporting requirements for risk/benefit information pertaining to pesticide use. Shirley Wager-Page

The reregistration status of zinc phosphide and strychnine. Brett Petersen

Group Discussion, Research Progress and Updates:

Thursday, November 19, 8:30-Noon

Group Discussion, Research Progress and Updates:

Convening of Sessions (Tuesday 17 November)

The Committee Chair, Desley Whisson, welcomed participants/attendees to the sessions at 1:00 pm (MST), Tuesday 18 November, 1998. The Chair noted the importance of WCC-95 and the informal exchange of good information. Attendees then provided verbal (self) introductions and stated their affiliations.

The Chair then turned the opening session over to Grant Vest, Administrative Advisor, who welcomed the participants and attendees and reviewed several administrative details affecting WCC-95. Key points of The Advisor included:

-A sheet was circulated to obtain current names, addresses, and updated phone/E-mail information.

- A review of the administrative requirements and guideline for WCC-95.

-This is the year to file for a Petition of Continuance since the current petition expires September 1999. (Note.-- To meet after that date we need to apply for continuance; the actual renewal process begins with submission of the new Petition by 15 January 1999).

-A draft form of the Petition for Renewal was distributed to participants for suggested revisions.

-It is of utmost importance to resubmit the Appendix H forms by previous participants as soon as possible and new participants are urged to initially complete Appendix H. All forms are to be sent to the Advisor.

-Several incorrect mailings had occurred for the 1997 Minutes/Abstracts/Supplementary Materials; The Advisor reiterated the need for up-to-date accurate mailing data on participants/attendees.

The Advisor was thanked and acknowledged for his support and assistance in handling the administrative activities of the WCC-95 Committee.

Seven presentations completed the Tuesday agenda (see Adopted Agenda and Abstracts).

Business Meeting (Wednesday 18 November)

Call to order:

The Chair, D. Whisson, called the business meeting to order at 8:30am, Wednesday 18 November, 1998. Acknowledgments and appreciation were extended by the Chair to G. Vest for his duties as Committee Advisor and to J. O'Brien for local arrangements and furnishing equipment for the WCC-95 Meeting. D. Whisson extended notes of apology from L. Sullivan and R. Marsh to the members for not being able to attend the Meeting.

Approval of minutes from 1997 Meeting:

D. Whisson noted that the minutes of last year's meeting were transcribed and circulated to each attendee; R. Sterner and NWRC were recognized and thanked for the timely preparation, reproduction, and distribution of the 1997 Minutes, Abstracts and Supplementary Materials. The Chair then asked if members found any issues/discrepancies in the 1997 Minutes as circulated. No comments/corrections were noted. W. Howard then moved that the 1997 Minutes be accepted as printed/circulated; B. Hazen provided a second to this motion. The 1997 Minutes were accepted unanimously.

Old business:

Next year's meeting --The Chair called for suggested dates for the 1999 WCC-95 Meeting. A discussion resulted and it was suggested that perhaps moving the Meeting forward one week might resolve some of the scheduling conflicts of the attendees. R. Timm suggested the dates of Nov. 9-11, 1999. It was noted that this would conflict with the Veterans Day Holiday. W. Howard moved that the Meeting be held at the same time and place next year. G. Miller seconded the motion. The 1999 WCC-95 Meeting dates of Nov. 16, 17, 18, 1999 to be held at Circus-Circus, Reno, Nevada, was passed by the members.

WCC-95 informational brochure -- [Note: No action was taken on this project since its suggestion in the 1996 WCC-95 Meeting.] D. Whisson called for discussion of the brochure project. R. Sterner suggested the brochure would be good to show what the WCC-95 objectives are and what we do. G. Vest recommended that the brochure should be sent out on the WCC-95 mailing list. R. Sterner volunteered to prepare a brochure. T. Salmon suggested that the WCC-95 Meeting dates be included in the brochure. Further discussion stated that the brochure could be used to recruit new members and that we should keep a non-political profile. D. Whisson called for a draft copy to be submitted to the Committee officers for review and that a printed copy be available for approval by the membership at the 1999 Meeting.

New business:

Other means of communication -- D. Whisson called for other ideas relating to ways WCC-95 could communicate to others what we do and how we can provide assistance. G. Vest suggested the use of a web site on Internet. It was suggested that we use an e-mail list server. Whisson commented that the e-mail list from last year was not used. T. Salmon volunteered to compile a WCC-95 e-mail list server and that the listing would be available for all Committee participants. G. Vest said this would satisfy the communications requirement for WCC-95 continuation. The membership was in agreement.

Facilities and fees -- D. Whisson thanked J. O'Brien for making the local arrangements for the Meeting. O'Brien then reported that since we had a $359.53 carry over from last year's Meeting, we could reduce the registration fee to $25 for this year's Meeting. Approximate cost for the Meeting room was $125 for day 1 and $318.75 each for days 2 and 3 for an approximate total of

$800 - $900 (not including pop or coffee since that was billed on a per can or cup basis). O'Brien suggested it would be best if he continued to provide the audio/visual equipment for the Meeting since Circus-Circus charged over $100/day for it. He also said we would reserve a larger meeting room for next year since numbers of participants and attendees continue to increase. M. Sullins reported that 36 people had registered for this year's Meeting.

Petition for continuance -- G. Vest distributed a draft of the renewal petition for member review and comment. He stressed the importance of having a list of participants and the need for everyone to return the Appendix H (Principal Investigator Contribution to WCC) form to him by January 15, 1999. The deadline for approval is March 15, 1999. There will be an effort to increase the renewal period to 5 years instead of the present 3-year period. D. Whisson commented that this 5-year period would be more compatible with the current WCC-95 issues. Thanks and appreciation were again extended to G. Vest for his role as Advisor.

Request to form northeastern US subgroup to WCC-95 -- D. Whisson provided copies of a letter of request from Paul Curtis to form a NE Regional Subcommittee or group of WCC-95 instead of forming their own Regional Coordinating Committee. Discussion was called for by D. Whisson. G. Vest indicated that there should be no disadvantages or funding problems if the northeast participated with the WCC. M. Conover said that it may be better for the NE group to form their own Coordinating Committee to work on it's own regional animal damage problems. B. Hazen commented that it would be good to share in formation with other parts of the country since many animal damage problems are becoming more common throughout the country. R. Baker suggested that we let the NE Group know that they are welcome to be associated with WCC-95 but that it may be to their own benefit to form their own Committee. R. Timm so moved. The motion was seconded and passed by the members.

Other matters:

D. Whisson reported that the Eighteenth Vertebrate Pest Conference (1998) was a great success. She also announced that T. Salmon will be chairman, and that D. Whisson and R. Timm will be program co-chairs, of the next VPC Conference to be held the 1st week of March 2000 in San Diego.

R. Timm spoke of the National Animal Damage Control Association (NADCA) and furnished information brochures.

G. Witmer mentioned that next year's proposed Great Plains Wildlife Damage Control Conference had been canceled. Some discussion of the issues associated with having numerous conferences of this type occurred (i.e., those focused on wildlife damage issues).

The membership agreed to continue to hold the WCC-95 business meeting on Wednesday mornings and to send advanced agendas to the members prior to the annual meeting.

Election of officers:

The membership agreed to continue the precedent of the current Vice-chair assuming the position of Chair and current Secretary moving to the office of Vice-chair. No one else was nominated. This procedure resulted in R. Sterner assuming the office of Chair and M. Sullins Vice-chair for the year 1999. Nomination was opened for the office of Secretary. R. Timm nominated T. Hagen who declined due to a conflict of schedule for next year. G. Witmer nominated D. Virchow who accepted to serve. M. Sullins moved to cast a unanimous ballot to elect Virchow. The motion was second by W. Howard and passed by the members. D. Virchow will serve as Secretary for year 1999.

Next meeting (dates, location &facilities, registration fees):

Location and Date --	**Circus-Circus Hotel** **Reno, Nevada** **November 16-18, 1999**
Responsible Individuals --	R. Sterner (Chair) M. Sullins (Vice-chair) D. Virchow (Secretary) J. O'Brien (Facilities arrangements)
Registration Fee --	$25
Non-Committee Members To be Invited --	Inform the 1999 Chair, if you have suggestions.
Other relevant Information --	Minutes drafted by M. Sullins (12/20/98), reviewed by D. Whisson, R. Sterner, and G. Vest (12/29/98 - 1/10/99), revised and distributed (1/15/99).

Adjourn the business meeting:

Chair D. Whisson called for a motion to adjourn the business meeting. J. O'Brien so moved - second by G. Witmer. Motion passed and the business meeting was adjourned at 10:00 am.

Continuance of Sessions (Wednesday 18 November)

The remainder of Wednesday's activities consisted of 2 videos shown by R. Sterner, five presentations, State and Agency updates, and general discussion (see Adopted Agenda). Key State/Agency Updates were:

M. Sullins — Expressed the concern in Montana of the plans to reduce the concentration of anticoagulant rodenticides from .01% to .005% active ingredient. Field studies conducted in Montana indicate a significant reduction in efficacy between these concentrations. This reduced efficacy and possible increased applications would make the anticoagulant baits too expensive to use on Montana range and croplands. The only alternative registered rodenticide would be zinc phosphide which has been shown to be ineffective for ground squirrel control in Montana. Eric Silberhorn asked that he be sent copies of the efficacy studies.

B. Jacobs — Reviewed some of the current RED requirements for rodenticide registrations.

R. Baker — Discussed the need to pursue a registration for broadcasting zinc phosphide on rangeland.

J. Steuber — Passage of Proposition 4 in the California election banned all uses of the leg and body hold traps (including padded traps). It also banned the use of 1080 and sodium cyanide. This all went into effect the day after the election. Wildlife Services in California immediately pulled all traps and M-44s. This has greatly impacted Wildlife Services in California and with the temporary halt of aerial hunting, only snares and call shooting are left. Since opposition to the use of neck snares is expected, WS is currently researching foot snares. There may be adverse effects on endangered species since trapping was used to help control predation on these species. Continued opposition and electoral action by animal rights groups is expected in other states and nationally. (Note: John Steuber is taking the position of State Director, Wildlife Services, Oklahoma.)

D. Whisson — What can we do as a pro-active group to counter animal rights groups?
-student education.
-publicize animal damage work rather than keep it hush.
-must be involved with the media.

M. Conover — Need more programs like Dale Rollins' (Texas A&M) carnivore program for 3rd graders.
-also such things as Internet, teaching modules, "position" stands.

State Updates:

T. Van Deelen — Studies and projects in Illinois will be continued; these include: urban deer study, damage impacts of small vertebrates, and pest goose problems.

R. Baker — Research on rat/gopher trap (Rat Zapper), worker safety issues concerning protective clothing (e.g., rubber gloves), and anticoagulant residues samples in nontartget animals by Calif. Fish & Game.

Completion of Sessions (Thursday 19 November)

Three presentations occurred on Thursday morning (see Adopted Agenda). These were followed by a final Group Discussion and Research Progress session and adjournment of the sessions at noon. Key inputs were:

G. Miller — Expressed concern about California Fish & Game investigations of nontarget poisoning; not using good investigation techniques; information not based on good database; need for training of Veterinarians in assessments of environmental toxicology.

J. O'Brien — Lab and field studies in Nevada are planned regarding the label for use of strychnine cabbage applied in burrows for ground squirrel control and strychnine alfalfa applied in burrows for pocket gopher control. Nevada needs SLN for use of zinc phosphide to control high microtus populations.

J. Steuber — Compound 1339 has been approved in California for use on pigeons and gulls at airport staging areas and also for ravens depredating livestock and damaging silage storage areas; still awaiting approval for use of 1339 at feedlots. One problem with 1339 is that birds often fly back to roosting areas to die may be very visible to the public. Wildlife Services still uses modified leghold traps to capture and relocate raptors (not prohibited in Prop. 4).

G. Miller — Acknowledged and thanked John Steuber for all the work and effort he had done in California and all wished John well in his new position as State Wildlife Services Director in Oklahoma.

M. Sullins — Expressed that the major concerns in Montana were the proposed decrease in concentration of anticoagulant rodent baits from .01% to .005% and the effort to list the black-tailed prairie dog as a threatened species. (The anticoagulant issue has been previously discussed in the minutes.) The prairie dog issue would have little impact on federal lands in Montana since little or no prairie dog control has been conducted on federal lands in the last 10 years. It would greatly impact the private landowners by reducing or eliminating any prairie dog damage control options for them. Such a listing would do more to endanger the prairie dog since landowners will be more likely increase control efforts before the listing goes into effect.

M. Conover — Presented an update of Berryman Institute activities; hunting conditions fear of animals for humans which may change animal behavior and damage; study to quantify the impacts of loss of control tools on animal damage control; studies of predation on nesting waterfowl and waterfowl nesting needs; team up with Australia Vertebrate Control Center to study contraceptives an species specific baits as an animal damage control tool; act as a clearing house for articles on animal rights and welfare; working with the National Trappers Assn.; study on fungus treatment to reduce consumption of vegetation by herbivores; held forum on wildlife damage to agriculture attended by agriculture agencies, animal rights and environmental groups, wildlife damage control professionals, etc.

W. Howard — Stressed the need to form a group of professionals to publish articles on animal damage. WCC-95 group may become resource specialists. Such a group would help educate the public and be a technical resource for environmental issues.

G. Witmer — The NWRC will be conducting a study looking at such things as paternity analysis, social behavior, coterie interaction in prairie dogs. They will also be working with Fort Collins in an IPM approach to prairie dog control. Boulder also has a habitat management plan and relocates prairie dogs. Plague is a real concern near urban areas.

G. Vest — Reminded the group to complete and return the appendix H of the petition for renewal of the WCC-95 project. He also asked the group for address updates for past attendees and participants for which mailings had been returned.

G. Witmer — Mentioned that CDC Center is testing a plague vaccine for rodents applied as a grain bait.

D. Whisson — Planned projects consist of testing a bird scaring device to be used for oil spills, testing anthroquinone as a bird repellant which has not proven to work, and developing baiting strategy for ground squirrel control using diphacinone (got the same efficacy with 2 applications 4 days apart as with 3 applications 2 days apart).

P. Gorenzel — Conducted study to test control of California ground squirrel using zinc phosphide. Results yielded 60 - 80% control without prebaiting and 85-90% with prebaiting. Testing was also conducted using an audiotape of crow distress calls to repel crows from almond orchards. The device was activated by photo cells and proved to be very effective.

R. Timm — Studies will continue at Hopland with the Livestock Protection Collar to find a replacement for 1080. Work may be conducted on the Coyote Lure Operative Device. A study regarding mountain lion depredation will look at such things as DNA analysis, saliva, and scat samples to identify depredating lions will be conducted. Bob stated that the facilities at Hopland were available for those wishing a research location. Hopland also has a new web page as well as an annotated bibliography.

A general discussion concerning an Agriculture Information Bulletin and collaborative review papers occurred. W. Howard initiated the "review" idea; these would provide scientific information and educational outreach to the public (i.e., a proactive attempt to deal with ballot initiatives involving wildlife damage management. Manuscripts would be refereed. R. Sterner volunteered to coordinate review efforts of those interested in generating this type of paper. A suggested topic for initiating these publication reviews was predator management and trapping. R. Sterner asked that anyone interested in working on reviews contact him. W. Howard suggested that the Berryman Institute would be a good repository for publications.

Some presentation topics for next year were volunteered by attendees:

Dealing with wildlife ballot initiatives. Some contacts could possibly be Donna Minnis, Mississippi State University, the Legislative Fund of America, or Jay McAninch, Chr. Calif. Ballot Initiative. Bob Timm suggested to contact those involved in wildlife ballot initiatives and put the results on the list server.

Mike Conover recommended the topic -- Why Do We Need Toxicants To Manage Small Mammals?

Action Items/Assigned Responsibilities/Deadlines/Target Dates:

R. Timm agreed to contact those individuals involved in agricultural efforts to deal with Proposition 4 in California during 1998 and to survey those individuals as to whether or not wildlife damage management reviews would have been useful during the election -- sort of decision-making information for W. Howard's suggestion about reviews.

T. Salmon will establish an e-mail list server for WCC-95, which would be available for all participants. Results of R. Timm's survey (see above) would be available on the server. Target date: As schedule permits.

R. Sterner will prepare a draft copy of the WCC-95 Informational Brochure for review by the Committee Officers. Target date: Prior to 1999 WCC-95 Meeting so final copy will be available for membership approval.

R. Sterner will coordinate a publications review group for animal damage issues to help educate the public and act as a resource reference. Target date: None assigned; dependent upon volunteers/interest.

M. Sullins will compile minutes, abstracts, and supplementary materials; D. Whisson, G. Vest, and R. Sterner will review. R. Sterner and NWRC Administrative Staff will copy/distribute to participants and attendees. Target date: January 15, 1999.

G. Vest will submit for Petition for Renewal to continue the WCC-95. Target date: Sept. 1999.

Summary of the discussions: (Note.-- Presentations/discussions followed the adopted agenda; however, for brevity/simplicity, comments on several topics that were revisited multiple times during the sessions have been condensed under single topics.)

PARTICIPANTS/ATTENDEES

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ABSTRACTS

CAPSAICIN, NORTHERN POCKET GOPHERS AND BEHAVIOR

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Abstract: Two laboratory studies of soil-moisture preference and soil-capsaicin repellency in northern pocket gophers (*Thomomys talpoides*) were completed in 1998; both studies involved a 2-choice procedure. In Study 1, 6 gophers were repeatedly exposed to 5, 10, 15, 20, or 25% moist soils compared to dry soil in random orders. During 0.5 h trials, gophers spent the greatest time in soil reconstituted to contain 10%-20% (wt:wt) moisture. A compartment x moisture interaction was attributed to gopher avoidance of soil containing 25% moisture, with gophers spending more time in the dry than wet soil for this choice. In Study 2, 24 gophers (6/group) were exposed to 0.00, 0.75, 1.50, and 2.25% capsaicin-soil mixtures during 3, 1-h, alternate-day trials; each trial was videotaped for analysis. Soil contact (bouts and min), soil digging (bouts and min), and pelage grooming (bouts and min) behaviors were scored. In soils containing ≥1.50% capsaicin, gophers decreased their mean soil-contact time relative to 0.00% moisture about 50% (26 min vs. 48 min/h), but increased the mean number of bouts and time spent grooming. Grooming time yielded a concentration x trial interaction; as gophers spent less time contacting these capsaicin-laden soils, grooming time declined to near those of the "placebo-exposed" gophers. Results demonstrate the feasibility of deterring gopher habitation by mixing chemical irritants in soil. Field trials to determine efficacy of soil-injection technology (capsaicin injection) for reducing burrow use and reinvasion of plots by northen pocket gophers are planned.

EFFICACY OF THE AERIAL APPLICATION OF METHYL ANTHRANILATE IN REDUCING BLACKBIRD DAMAGE TO SWEET CORN AND SUNFLOWERS

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Abstract: A number of bird species, both resident and migratory have been reported in the literature to cause significant depredation problems to sweet corn and sunflowers just prior to harvest. Over the years a number of management techniques, devices and chemicals have been developed and tested, all with limited success or with major constraints.

Field trials using methyl anthranilate, formulated as Bird Shield® repellent, was applied by aerial applicators at one pint per acre on sweet corn, in Colorado, and sunflowers in North Dakota. In the former nine corn fields, ranging in size from nine to twenty-five acres were treated twice, at five-day intervals, prior to harvest and compared with four treated fields. In the latter cattail marshes where the birds were roosting adjacent to and in the center of the sunflower fields were treated twice, at seven day intervals when the birds began to feed on the sunflowers. Three out of the four untreated corn fields were unharvestable, with greater than 75% damage, because of the severe damage caused by the resident populations of red-wing blackbirds (*Agelaius phoeniceaus*) by the end of the study. Three of the treated field sustained no damage at all. The damage in the remainder was contained at pre-treatment levels (4% to 20%). The two applications of the repellent were sufficient to move the resident population of blackbird (*Agelaius*, spp.) out of the sunflower fields with no substantial damage to the crop. Untreated sunflowers sustained a mean damage of 78% to 90%. Treated sunflowers sustained between 2.6% to 3.4% damage. The difference in seed weights between untreated and treated plots was significant (P=0.01) with a mean weight of 0.018 g./cm^2 of seed per head within the former and 0.084 g./cm^2 of seed per head within the latter. Harvest weights ranged from 133 to 700 lbs./ac. (Mean = 344) in the untreated plots while weights ranged from 1430 to 1909 lbs./ac. in the treated plots. No adverse effects were noted with fish or resident populations of ducks.

LIVESTOCK PROTECTION COLLAR USE AT THE U.C. HOPLAND RESEARCH & EXTENSION CENTER

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Abstract: We have used the Livestock Protection Collar (LPC) containing sodium fluoroacetate (Compound 1080) as our primary lethal means of controlling coyote predation on sheep and lambs at the Hopland R & E Center since fall 1995. During this time, we have avoided removal of coyotes that were not implicated in killing sheep on our 5300-acre rangeland research facility. In 20 deployments of LP-Collared sheep, we have killed at least 9 (and possible 11) sheep-attacking coyotes using this tool. Radio-telemetry of coyotes allowed recovery of 5 coyote carcasses, while also verifying earlier observations that most of our predation is caused by dominant, territorial adult coyotes. Our total loss rate of lambs (including "missing" animals) during 1997 was the lowest it has been in more than 20 years, and confirmed lamb losses of coyotes in 1998 were significantly lower than in any recent year. Our data suggest that selective removal of sheep-killing coyotes by means of the LP Collar, in the absence of other lethal predator control measures, may be a more effective strategy in our situation than conventional control. Unfortunately, passage of Proposition 4 on the November 1998 ballot banned the use of Compound 1080 in California, in addition to prohibiting use of steel-jawed leghold traps. Continuation of this study will depend upon our ability to formulate and effectively use an alternative toxicant in the LP Collar.

NON-TARGET HAZARDS OF 2% ZINC PHOSPHIDE GRAIN BAIT TO FREE-RANGING RING-NECKED PHEASANTS IN NORTHERN CALIFORNIA ALFAFA FIELDS

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Abstract: Nontarget hazards to 39 wild-caught and 32 pen-reared ring-necked pheasants (*Phasianus colchicus*) were studied using 2.0% zinc phosphide steam-rolled-oat (SRO) baits to control California voles (*Microtus californicus*) in alfalfa (*Medicago sativa*) fields at two California sites in the Sacramento Valley near Meridian and Nicolaus. Following the capture and radio-collaring of wild pheasants and acclimation of pen-reared birds to radio-collaring, they were released next to alfalfa fields, following the next to the last harvest. After the last harvest, fields were then baited by broadcast with either a placebo bait or zinc phosphide-treated bait. The label-recommended broadcast rate of 11.2 kg/ha (10 lbs/acre) of steam-rolled oats (SRO) results in only 26.9 grains/m^2 (2.5 grains/ft^2). Habitat use and mortality of radio-collared birds were monitored daily before and after baiting by radiotelemetry.

No pheasants were killed as a result of the zinc phosphide baiting at the Meridian (treated) site. Of 19 wild pheasants and 18 pen-reared pheasants at the Meridian site that were monitored by radiotelemetry, 20 died during the study. The primary cause of death was avian and mammalian predation (n=17, 85%); one other bird was killed by hunters (prior to the hunting season), one was hit by harvesting machinery, and another died of unknown causes. All mortalities were found in habitats other than alfalfa. Only 28% of the pen-reared pheasants survived during the 4 weeks following release, while the survival rate of wild pheasants was 68%. Wild-caught male pheasants at Meridian moved a daily average of 290 m and females moved 285 m; pen-reared pheasants moved greater distances daily, with males averaging 390 m and females 327 m. Of 815 pheasant locations determined using radiotelemetry at the Meridian site, pheasants were located in alfalfa fields only 53 times (6.5%); only 3 of these times occurred in alfalfa after harvest. These data indicate that pheasants did not utilize alfalfa after cutting, either as foraging or resting habitat. Their use of other crop and non-crop habitats was as follows: milo (sorghum - *Sorghum vulgare*) 368 times (45.2%), rice (*Oryza sativa*) 184 (22.6%), ditches 89 (10.9%), corn (*Zea mays*) 52 (6.4%), orchards 44 (5.4%), and fallow fields 14 (1.7%). No pheasants were found dead in alfalfa fields following treatment with zinc phosphide baits.

Of 20 pheasants and 14 pen-reared pheasants at the Nicolaus (control) site, 17 pheasants were killed by avian and mammalian predators. Only 29% of the pen-reared pheasants at Nicolaus survived during the 4 weeks following release, while 74% of wild pheasants survived. Wild-caught male pheasants at Nicolaus moved an average of 295 m daily and females moved 276 m; pen-reared pheasants moved greater distances, with males averaging 335 m and females 382 m. Of 927 pheasant locations determined using radiotelemetry at the Nicolaus site, pheasants were located in alfalfa fields 133 times (14.3%), and only 5 of these times occurred in alfalfa after harvest and after baiting with placebo baits. Their use of other crop and non-crop habitats was: rice 277 (29.9%), ditches 137 (14.8%), corn 136 (14.7%), sugar beets (*Beta vulgaris*) 126 (13.6%), and fallow fields 66 (7.1%).

THE PROBLEM OF BELDING'S GROUND SQUIRRELS IN ALFALFA IN NORTHEASTERN CALIFORNIA

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Abstract: Belding's ground squirrels (*Spermophilus beldingi*) are a major pest in high elevation alfalfa growing areas of northeastern California and eastern Oregon. Economic losses result from the squirrels feeding and burrowing activities within alfalfa fields. In 1995, I initiated a study in collaboration with UC Extension Advisors in Siskiyou and Modoc Counties to assess economic loss due to Belding's ground squirrels and to explore alternative control strategies for this pest. The study has comprised (I) a survey of growers to evaluate the extent of the problem and control methods used, (ii) an assessment of actual yield los (using exclosures), (iii) an evaluation of fencing to reduce squirrel invasion into new fields, and (iv) a test of Rodentorch, a burrow-exploding device. Most growers reported direct yield losses of 5 to 20% despite control efforts that cost between $1 to $26 per acre. Estimates of the annual costs of damage to harvesting equipment ranged between $100 to $5000 (mean ($1,300) per grower. All growers expressed their frustration with the low effectiveness of available control methods. We estimated yield losses to be as high as 48% in the first cutting. At current market values, this represents a loss of $146- per acre. Fencing fields to reduce the rate at which squirrels invade new fields may therefore be a cost-effective technique for minimizing losses. We are currently evaluating the effectiveness of this technique at 2 sites, using a fence made from erosion control fabric. Rodentorch was not effective, reducing populations by only 38.1%.

COMPARISON OF SPOT BAITING TO BAIT STATIONS USING CHLOROPHACINONE FOR CONTROL OF BELDING'S GROUND SQUIRRELS IN NORTHERN CALIFORNIA

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Abstract: In May 1996, efficacy investigations were conducted in Siskiyou County in northern California using either 0.01% chlorophacinone on steam-rolled oat (SRO) groat bait applied by hand at burrow entrances or 0.005% groat bait using bait stations for controling free-ranging Belding's ground squirrels (*Spermophilus beldingi*) in alfalfa. The National Wildlife Research Center (NWRC) research investigators collaborated with the California Department of Food and Agriculture (CDFA) and Siskiyou County Department of Agriculture (SCDA) personnel. The study sites were located near Dorris, CA, in the Northeast corner of the Butte Valley. Six square treatment units (TUs) were established in alfalfa hay fields that supported populations of Belding's ground squirrels for each of two studies. Each TU measured 0.4 ha (1.0 acres) and flags defined its outer boundaries. To reduce posttreatment ground squirrel movement on to the TU, a square 4.9 ha (12.2 ac) buffer zone was established and also treated around each TU. A minimum of 50m (164 ft.) separated the edge of a buffer on one TU to the edge of every other TU and buffer.

The bait was formulated by a commercial supplier and quality control assay results indicated the mean percent of chlorophacinone observed (w/w) was 0.0109% (SD=0.000084%, n=5). Bait application was made according to label specifications. Trained applicators scattered a tablespoon (11.5g) of 0.01% bait on bare ground around ground squirrel burrows at each active ground squirrel entrance. Baiting commenced on May 13, 1996, but was discontinued when an arctic storm brought unexpected wet weather to the study area for 7 days. However, an uninterrupted supply of bait was made available for 8 days (ending May 28, 1996) during dry conditions following baitings on May 20 and May 22, 1996. Efficacy (i.e., % reduction) as measured by both the visual counts (73.5%) and open-hole index (80.0%), and both surpassed the EPA's 70% minimum standard for efficacy.

Four inch Polyvinyl Chloride inverted-T anticoagulation bait stations were constructed by state agricultural personnel. These bait stations will then be placed in a grid with spacing of 100-foot intervals on the 6 TUs and their associated buffers. On the first day of baiting 0.91 kg (2 lbs.) of either the treated or control bait was placed in each bait station. Baiting commenced on May 13 and continued through May 28, 1996. Efficacy (i.e. % reduction) was determined using visual counts (52.1%) and closed-hole index (≅ 0%).

OPERATION AND SUCCESSES OF A LETHAL DEER REMOVAL PROGRAM IN SUBURBAN CHICAGO, ILLINOIS

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Abstract: The Forest Preserve District of DuPage County has operated a lethal deer removal program during winter from 1992 to 1997. From 14 forest preserves 2,599 white-tailed deer (*Odocoileus virginianus*) were removed by sharpshooting and capture with a rocket-net followed by euthanasia via a penetrating captive bolt. Annual operational field costs ranged from $119.00 to $269.00 per deer removed. Greater than 1,700 deer were removed from the 10 km^2 Waterfall Glen preserve. Population estimates at Waterfall Glen ranged from 104.5 deer per km^2 in 1992 to 16.5 deer per km^2 in 1997. Removal intensity from Waterfall Glen ranged from 56.6 deer per km^2 to 16.6 deer per km^2 from 1992 to 1997. In response to a declining deer population reported deer-vehicle collisions on roadways adjacent to Waterfall Glen decreased from a high of 33 collisions in 1992 to 6 in 1997. Furthermore, flora studies have detected increases in species diversity, mean plant height and percent vegetative ground cover in Waterfall Glen as the deer population has declined. Lethal removal of deer has proved successful at reducing deer population density, decreasing deer-vehicle collisions and restoring native ecosystems in DuPage County forest preserves.

BLACK-FOOTED FERRETS AND WILDLIFE DAMAGE ISSUES

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Abstract: The black-footed ferret, *Mustela nigripes*, (BFF) has been listed by US Fish and Wildlife Service since 1967 as an endangered species. By captive breeding standards, the Service's program has met with success. In 1996, over 500 BFF were captive-reared and by 1998 over 230 ferrets were available for release. Wild-born progeny programs of released BFF have very recently been enhanced by predator control and better pre-conditioning techniques. South Dakota saw 24 wild-born litters in 1998. A major goal set early in the process by the BFF Interstate Coordinating Committee has been to have ten disjunct BFF populations across the geographical range of the prairie dog, *Cynomys ludovicianus*. The goal is a pre-spring population of 1500 adult BFF.

Successful BFF reintroduction sites have typically sought the opinion and support of private land managers early in the process and have included them in working groups and in annual reviews. Through the "nonessential experimental" population designation of BFF's, the Service has sought to assure land managers that "they can continue operations and activities...without concerns...[and that] their [landowner's] economic gain and/or stability [would not be affected]. However, until little or no economic incentives have been made toward land owners/managers.

Private land managers can be expected to receive compensation for maintenance of prairie dog/BFFs and their habitat and for loss of use by recreationists. The former might include reduced revenues from livestock grazing and payments for low level BFF or prairie dog monitoring. The latter might include losses due to big game hunter access fee restrictions and use of dogs or motorized recreational vehicles by sportsmen. Compensations are also appropriate for effective predator control programs maintained land managers.

In the private sector, issues preventing effective prairie dog control that relate to BFFs include necessity for block clearances or inability to gain exemptions and inaccessibility of regional Service directives concerning compliance. Issues that prevent effective prairie dog control within USDA APHIS-WS include inconsistent regional Service directives concerning compliance, nonexistence of compiled BFF surveys from other agencies and entities (utilities, contractors) and vagueness in "*reasonable and prudent*" directives among Section 7 regulations. Block clearance on large tracts of private lands with multiple owners and clarification of "reasonable and prudent" measures remain the two most important needs for the wildlife damage control field.

WS and the Service appear allied and productive in predator control and disease management programs associated with BFFs. But curtailed control techniques and costs of BFF surveys have added to WS budgetary and operational concerns.

AN UPDATE ON RESEARCH SPONSORED BY THE VERTEBRATE PEST CONTROL RESEARCH ADVISORY COMMITTEE (VPCRAC)

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Abstract: Seven studies currently being performed by researchers under contract to the Vertebrate Pest Control Research Advisory Committee were described. Three separate studies have been performed to establish residue tolerances for chlorophacinone and diphacinone on rangeland grasses, alfalfa, and potatoes. Two projects are currently in progress by U.C. Davis to establish and maintain a complete database of all research projects contracted by the VPCRAC and then an outreach component that will educate the industry and public regrading the research conducted. UC Berkeley continues their economic analysis of the use or non-use of compound 1080 for agricultural rodent control in California. The VPCRAC has contracted with Arcadis, Geraghty, & Miller to coordinate and prepare a response to the Registration Eligibility Decision (RED) on the Rodenticide Cluster dictated by US EPA. Eric Silberhorn, principal lead investigator for Arcadis, Geraghty, & Miller provided a brief overview of the Rodenticide Cluster RED.

Three studies were conducted to determine residue or plant uptake values for chlorophacinone and diphacinone in three agricultural crops. As expected with such a low application rate of 10#/acre and 2X, no residue or uptake was discovered. Genesis Laboratories of Wellington, Colorado, John Baroch, conducted the alfalfa study; NWRC conducted the rangeland grass study on the Hopland Research facility, Bob Timm, Superintendent. Thank you for the area to conduct the project; Larry Brewer, EBA, conducted the potato study in the Tule Lake area. The cost of the three studies exceeded $325,000.

The ongoing work of Paul Gorenzal, UC Davis, to establish and maintain a database of all research conducted by the VPCRAC has been frantic. The databases include all the pertinent facts about research and is indexed for retrieval. By having an organized database, the VPCRAC is able to reply to requests for study information; this has been invaluable during the RED process.

The database will also aid in the development of two outreach documents that are currently in progress by Terry Salmon. On document in a color glossy format will highlight a wide range of studies. Its target audience will be the 90 Commodity Boards within California, Farm Bureau, the Agricultural Commissioners, and agencies such as US EPA. It will inform these entities of conducted research. The second document will be in the newsprint format for mass distribution. It will be targeted to growers, service organizations, and the public at large. It will include a more extensive listing of research projects conducted by the VPCRAC. The compound 1080 economic analysis is currently midstream. In light of the Proposition 4 passage, the study will continue until completion unless other circumstances warrant cancellation.

INTEGRATED PEST MANAGEMENT (IPM) OF VERTEBRATES: MOVING AHEAD

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Abstract: We have learned a great deal about some vertebrate-crop damage situations in North America, including many methods that can be used to help reduce losses. In those cases, we should be able to synthesize that knowledge of biology, ecology, damage, and management into an IPM assessment that will not only assist producers and land managers, but will also help direct or prioritize future research efforts. While vertebrate IPM strategies are probably not as advanced or readily available as insect and plant disease IPM strategies, it seems that many situations currently lend themselves to an IPM assessment; examples include pocket gophers in forestry and alfalfa settings, prairie dogs on rangelands, deer in crops, and geese in crops. Our IPM Project at the National Wildlife Research Center will endeavor to complete several IPM assessments.

An IPM strategy should incorporate many considerations; these can be classified under the six categories listed below. Under each category, several topics need to be addressed.

Species involved: identification, monitoring methods, demographics (densities, reproductive potential, dispersal, mortality), foods, habitats, limiting factors, "weak links" in life cycle.

Damage caused: types, amounts, timing, quantification of damage (of amount, costs), prediction of damage, factors predisposing resource to damage, economic thresholds.

Methods available: cultural, habitat manipulation, physical (barriers, frightening), chemical (repellents, attractants, toxicants), biological (predation, chemosensory, reproductive control, disease/parasites), removal (trapping, shooting), combinations of methods; effectiveness, cost, durability/longevity, number of applications required, maintenance requirements, legality, sociopolitical aspects.

Comprehensive management strategy: understand all aspects of species involved, potential for damage, methods available to prevent or reduce damage (including advantages and disadvantages of each); identify informational needs (if any), develop a decision key, and possibly computer-assisted software, to assist in decision-making and implementation of the strategy; consider benefit-costs; consider reinvasion and perhaps reduce with managed buffer zones.

Implementation plan: consider when and how to implement the strategy; consider infrastructure needs (scale, cooperators, control body, authority); consider logistical needs (personnel, equipment, funds); pilot tests (lab, pen, field); delay implementation if significant informational needs exist.

Reassessment and research needs: monitor implementation and results; design improvements or "tweaking" of strategy; design studies to meet significant informational needs (identified previously); set up so can easily revise or improve.

Develop products for end-users: outlets for education and training programs, user materials.

REPORTING REQUIREMENTS FOR RISK/BENEFIT INFORMATION PERTAINING TO PESTICIDE USE

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Section 6(a)(2) of the Federal Insecticide, Fungicide and Rodenticide Act requires pesticide registrants to report information concerning unreasonable adverse effects of their product to EPA. On June 16, 1998, a final rule codified in 40 CFR 159 became effective that supersedes all previous policy pertaining to risk/benefit reporting. Reportable information includes scientific data, pesticide residues in food or feed that exceed tolerances or that don't have a tolerance, detection of pesticides in water, and adverse incidents.

Reporting of alleged unreasonable adverse incidents is required even if a causal link between exposure to the pesticide and the effect has not been established. Inference of linkage between exposure and effect is sufficient to require reporting. Registrants must report information with which they may disagree unless they can establish that the toxic effect or reported exposure didn't occur. Additionally, reports of adverse incidents resulting from misuse of the product must be reported even if a warning pertaining to the adverse effect is included on the pesticide label. In PR Notice 98-3 issued April 3, 1998, EPA states that submission of an incident report by a registrant is not considered to be an admission of causation by the registrant.

Information relevant to the risk/benefit assessment of pesticide registrations currently or formerly held by the registrant is reportable. If information is known to employees involved in product development or registration, agents, supplemental distributors and others who could reasonably be expected to possess information on the toxicity of chemicals, the information is considered to be in the registrant's possession.

Three minimum conditions must be present for the reporting requirement: 1) The registrants aware, or has been inform that a person or non-target organism may have been exposed to a pesticide. 2) The registrant is aware, or has been informed that the person or non-target organism suffered a toxic or adverse effect or may suffer a delayed or chronic adverse effect in the future. 3) The registrant has or could obtain information concerning where the incident occurred, the pesticide product involved, the product registration number, and the name of the person to contact regarding the incident.

The minimum information pertaining to the product that would trigger reporting is the active ingredient. Therefore, all registrants of pesticide products are required to report incident data pertaining to an active ingredients that are common to their products. Incident data pertaining to an active ingredient need not be reported if the information: (1) is clearly erroneous (2) has been previously submitted (3) is reported in a publication (4) concerns former inerts, contaminants or impurities. 5) concerns a toxic effect to pests not specified on the label, provided that such pests are similar to pest specified on the label. If the event involves a toxic effect to an unrelated species even if that species is regarded a pest, the incident must be reported 6) concerns a toxic effect to non-target plants, which were at the use site at the time the pesticide was applied or it concerns phytotoxicity to the treated crop – warning of phytotoxicity must appear on the label.

Implementation of the final 6(a)(2) rule has expanded EPA's access to information that demonstrates a product meets the standards of registration rests with the registrant. Registrants will benefit from the assurance that their product performs its intended function without causing unreasonable adverse risks to the environment. As previously unknown risks become apparent, risk mitigation can occur.

REREGISTRATION STATUS OF STRYCHNINE AND ZINC PHOSPHIDE

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Within the last 3 years the Environmental Protection Agency (EPA) has issued Reregistration Eligibility Decisions (RED) for all rodenticides. Consortia have been established to address data gaps identified in the REDs for technical strychnine and zinc phosphide.

STRYCHNINE – The RED (March 1997) sought 8 data submissions, but waived the 21-day dermal toxicity test. Submission of human poisoning incidents between 1990 and 1992 was required. The Consortium also submitted summaries for 1986-88 and 1993-96 as comparative data. These data show a slight decrease in incidents following the moratorium on above ground uses; the majority of incidents involved products no longer registered. Six data submissions (GDLN 81 Series) were also required for a "representative" product of the 0.5% strychnine end-use products. Existing data were cited for acute oral as well as acute and primary dermal irritation studies. Inhalation of the bait material caused no mortality at 2 mg/L air. Additionally, the test bait did not cause eye irritation or dermal sensitization.

ZINC PHOSPHIDE – The RED (August 1998) emphasized 4 areas requiring further work: additional data for technical and end-use products, product formulation requirements to reduce exposure to children and pets, stakeholder meetings to determine additional risk mitigation measures, and new labeling requirements.

Technical Product: In addition to basic product chemistry for zinc phosphide the EPA required submission of sample storage information to maintain the tolerances for grapes, sugarcane and rangeland grasses, a yearly summary of human poisoning incidents for the next 11 years and acute aquatic toxicity testing on a warm and cold water fish and a invertebrate species. The Consortium requested a waiver for the aquatic tests due to the physical nature of the chemical making testing difficult and current use restrictions making exposure improbable. Eight previous studies showed that zinc phosphide is highly toxic to aquatic species [warm water fish (3 studies) LC_{50} ~ 0.6 mg/L; cold water fish (3 studies) LC_{50} ~ 0.7 mg/L; aquatic invertebrate (2 studies) LC_{50} ~ 0.2 mg/L]. A preliminary worst case risk assessment, assuming a maximum application rate and 100% of zinc phosphide directly entering into a 6-inch deep pond, showed the EPA's Restricted Use Level of Concern (LOC) was exceeded for only aquatic invertebrates and the Endangered Species LOC exceeded for fish.

End-Use Products: The EPA required submission of the Heath Effects Division, 6-pack acute toxicity tests (acute oral, acute dermal, acute inhalation, primary eye irritation, primary dermal irritation, and dermal sensitization) and submission of both laboratory and field efficacy data for the Norway and roof rats, house mice, prairie dogs, ground squirrels and Peromyscus spp. To mitigate risks of accidental ingestions of bait (children), the EPA is requiring: (1) pending EPA clarification, registrants of commensal uses are required to reformulate baits with a dye marker and bittering agent and (2) significant label changes to minimize exposure to children and domestic pets and additional directions for use on specific crops.

SUPPLEMENTARY MATERIALS

REREGISTRATION ELIGIBILITY DECISION

Aluminum and Magnesium Phosphide

LIST A

CASES 0025 & 0645

Executive Summary

The U.S. Environmental Protection Agency has completed its reregistration eligibility decision for the pesticides aluminum and magnesium phosphide. This decision includes a comprehensive reassessment of the required target data and the use patterns of currently registered products.

Aluminum and magnesium phosphide are registered as fumigants on a wide variety of raw agricultural commodities including stored field, grain and vegetable crops, stored processed foods and non-food commodities. Typical storage structures include silos, bins and railcars. These pesticides are also registered for use in animal dens and burrows. Both aluminum and magnesium phosphide act as broad spectrum insecticides and as rodenticides for controlling small mammalian pests. Aluminum and magnesium phosphide are formulated as pellets, tablets, impregnated materials and dusts. The Aluminum and Magnesium Phosphide Task Force is supporting the reregistration of all currently registered uses.

Aluminum and magnesium phosphide react with the moisture in the atmosphere to produce phosphine gas which is the substance that is active as a pesticide. For this reason, and given their common use sites and methods of application, the Agency is considering these two pesticides together for the purposes of risk assessment and reregistration.

The Agency has determined that all uses of aluminum phosphide and magnesium phosphide as specified in this document are not currently eligible for reregistration. The Agency has identified risks that must be reduced prior to these pesticides becoming eligible for reregistration. The Agency will conduct a public review process to identify the best ways to reduce the risks associated with aluminum and magnesium phosphide. This process will include a public comment period and a stakeholder meeting. Following the conclusion of this process, the Agency will make a final determination on the reregistration eligibility of aluminum and magnesium phosphide. If found to be eligible, the Agency will specify the requirements upon which will this eligibility will be contingent.

In determining whether to retain, reduce, or remove the 10X FQPA safety factor for infants and children, the Agency uses a weight of evidence approach taking into account the completeness and adequacy of the toxicity data base and the nature and severity of the effects observed in pre-and post-natal studies. The data provided no indication of increased susceptibility of rats to in utero or postnatal exposure to aluminum or magnesium phosphide. In addition, exposure assessments do not indicate a concern for a potential risk to infants and children because residues of phosphine are not expected in food or drinking water and there is only a limited registered residential use at the present time that the Agency has proposed to be removed. Given these factors, the Agency determined that the 10X safety factor to account for increased sensitivity of infants and children be removed based on an evaluation of the toxicology and exposure data.

Regarding aggregate exposure, the Agency only considered dietary exposure from food because drinking water exposure is not expected and there is only a limited registered uses at the present time that the Agency has proposed to be removed. Since, as mentioned above, no residues of phosphine gas are expected on food or in drinking water aggregate risk is not a concern. The Agency also considered the possible risks associated with a related pesticide, zinc phosphide, which also generates phosphine gas in this aggregate assessment. The RED for zinc phosphide determined that an aggregate assessment for that chemical for the various possible sources of phosphine from its uses was not warranted because the likelihood of exposure is very low/unlikely. Therefore, the contribution of zinc phosphide to this aggregate assessment was negligible.

The Agency does not have, at this time, available data to determine whether aluminum and magnesium phosphide have a common mechanism of toxicity with other substances or how to include these pesticides in a cumulative risk assessment. For the purposes of this assessment, therefore, the Agency has not assumed that aluminum and magnesium phosphide have a common mechanism of toxicity with other substances.

Given the use patterns and environmental fate characteristics of these pesticides, aluminum and magnesium phosphide are not expected to pose a significant ecological risk to non-target organisms or to water resources under most circumstances. The exception is potential risks to some endangered species. Since one of the uses of these pesticides is as a burrow fumigant for the control of rodents there is a concern that several endangered or threatened species, such as the black-footed ferret, could be present in burrows targeted for fumigation.

Given the high toxicity of aluminum and magnesium phosphide and potential risks posed to occupational and residential bystanders a number mitigation measures are proposed by the Agency. Since aluminum and magnesium phosphide have

significant benefits and there are few if any viable alternatives, the Agency believes that it is important that a broad stakeholder process be conducted to discuss these measures and/or to develop other workable mitigation measures that adequately protect occupational and residential bystanders. These proposals present the Agency's best attempt to reduce the risks of concern. These measures are to be discussed as part of the public review and stakeholder meeting process mentioned above

The following instructions are to be applied after the eligibility decision has been made following the completion of the public comment and stakeholder process. Before reregistering the products containing aluminum and magnesium phosphide, the Agency is requiring that product specific data, revised Confidential Statements of Formula (CSF) and revised labeling be submitted within eight months of the issuance of the document determining eligibility. These data include product chemistry and acute toxicity testing for each registration. After reviewing these data and the revised labels and finding them acceptable in accordance with Section 3(c)(5) of FIFRA, the Agency will reregister a product. Those products which contain other active ingredients will be eligible for reregistration only when the other active ingredients are determined to be eligible for reregistration.

Process

The Agency has developed a number of mitigation measures which it proposes in order to reduce the risks outlined in this document. A number of these mitigation measures are required by this RED as conditions of reregistration. Given the high toxicity of aluminum and magnesium phosphide and potential risks posed to occupational and residential bystanders, several additional mitigation measures are proposed by the Agency. However, since aluminum and magnesium phosphide have significant benefits and there are few if any viable alternatives, the Agency believes that it is important that a broad stakeholder process be conducted to discuss these measures and/or to develop other workable mitigation measures that adequately protect occupational and residential bystanders. Therefore, the Agency is planning to hold a series of stakeholder meetings to accomplish this objective. The initial stakeholder meeting will be held within 180 days from the issuance of this RED at a location to be determined. For this meeting to be most efficient and successful, all interested parties and viewpoints will be welcomed and considered. The outcomes of these meeting will effect all aluminum and magnesium products and may impact the eligibility of these products.

(5) Proposed Risk Mitigation Measures

The following mitigation measures are proposed for all aluminum and magnesium phosphide products. These measures are to be discussed as part of the public review and stakeholder meeting process mentioned above.

i. Notification of Authorities and On-site Workers

Certified applicators must ensure that the local authorities are notified of planned fumigation events. Applicators would be responsible for the notification of the proper authorities (fire departments, police departments etc.) of the time and place of fumigations prior to conducting these operations. Notify appropriate company employees especially those who might be expected to be in the proximity of the fumigation/aeration, prior to fumigation.

ii. Requirement for Certified Applicators

In order to better ensure the safe conduct of fumigation/aeration operations, the Agency is requiring that all persons who conduct these activities be a certified applicator or that certified applicators supervising the activity be within 50 ft of the operation and within clear sight-line of the persons conducting the operation. Current labels allow for non-certified fumigators and aerators to conduct activities under the direct supervision and physical presence of a certified applicator. However, it is possible under this current language for the certified applicator to be a significant distance away from the actual operation, impeding his/her ability to adequately oversee the operations. This problem would be solved by implementation of this requirement.

iii. Prohibit Aeration of Railcars, Railroad Boxcars, Other Vehicles, and Containers En-Route.

Aeration of fumigated railcars, railroad boxcars, shipping containers, and other vehicles while in transit is prohibited. Labels must include this prohibition.

iv. Placarding fumigated structures, containers, and vehicles.

Currently, labels require the placarding of structures, containers, and vehicles that have been fumigated. The Agency is requiring that these placards, or some other documentation that accompanies the structure/container/vehicle, clearly state that prior to entering the structure/container/vehicle a certified applicator or trained person under the supervision of a certified applicator (as defined above) must monitor the concentration of phosphine therein. Unloading where exposure to workers or bystanders is possible, or entry must not occur until the measured concentrations are below the appropriate standard unless appropriate PPE is worn. These placards must also contain information for reporting incidents which is consistent with the incident

reporting program developed by the registrants.

v. Establish an Incident Reporting Program.

Given the high incident rates for these pesticides, registrants are required to establish programs for the comprehensive reporting of incidents to the Agency on an annual basis.

vi. Personal Protective Equipment Requirements

The Agency is requiring that all persons involved in fumigation/aeration activities must wear respiratory protection during those operations unless it can be verified via monitoring that the concentrations of phosphine are at or below the established standard. PPE must be worn by any person conducting monitoring activities until concentrations are known to be below the established limit. In the event of a spill or leak, SCBA or supplied air must be worn until the spill has been cleaned or the leak has been repaired.

As mentioned previously, a full face respirator is not always adequately protective, and SCBA can be cumbersome and difficult to use over extended periods of time. Supplied air is a possible alternative. Supplied air is defined as a full-face or hood respirator to which is supplied uncontaminated air, usually via a hose fed by an electric compressor. The face piece or hood must be maintained under positive pressure to maintain the maximum protection factor.

vii. Require two-man operation for any activity that would involve entry into a fumigated structure.

Due to the acutely toxic of inhaling phosphide gas, a minimum of two qualified persons are needed to carry out any fumigation requiring entry into a structure. One person must be a certified applicator and one person must be trained in the use of monitoring equipment and the health effects of phosphine gas. Although phosphine gas is considered to have good 'warning properties' because of a foul odor detectable by smell as low as 0.02 ppm, not all persons have the same sense of smell. Because some persons may have a poor sense of smell, and due to the capacity for the sense of smell to be fatigued after prolonged exposure, the fumigation workers should rely upon chemical detecting instruments.

viii. Establish of 500 foot buffer zone and restricted area around all fumigated structures

The Agency is prohibiting the fumigation and aeration of structures that are within 500 feet of residential areas. Further, a 500 foot restricted area must be implemented

for all areas/structures undergoing fumigation/aeration. These steps are taken primarily to prevent exposure to residential bystanders. Prior to entry to this area monitoring must be conducted to ensure that the concentrations of phosphine in the atmosphere is less than the 0.03 ppm standard established in this RED or the limit of detection of the best available technology. Entry is not allowed above that concentration unless appropriate PPE is worn. Placarding must occur around the perimeter of the 500 foot restricted zone. Efforts must be made to request permission for placarding where placarding of the perimeter would involve other people's property.

ix. Institute More Thorough Monitoring Around the Commodity

The Agency is requiring stringent monitoring when unloading or otherwise disturbing a commodity that has been fumigated, since the level of phosphine gas may be higher at the core of the commodity than in the surrounding air. Monitoring at the door or hatch is insufficient. Therefore, concentrations must be monitored at the top, middle, and bottom levels of the commodity/storage facility, where feasible, because of stratification of gasses and vapors (similar to monitoring in confined spaces, OSHA 29 CFR 1910.146).

x. Require Seal/Leak Testing for Fumigated Structures

Prior to fumigation, the structure must undergo seal/leak testing using established methods to ensure that leaking during fumigation will not occur. Record of seal/leak tests must be retained by the certified applicator. Leaks must be repaired prior to fumigation. Fumigation is prohibited in cases where leaks are discovered and cannot be sealed.

xi. Establish a Minimum Distance from Residences for Burrow Use and PPE for Applicators During these Applications.

Treatment of burrows for rodent control is prohibited within 100 feet of an residence. Note that current labels have a restriction of 15 feet, which may not be protective if burrow tunnels extend toward residences (basements). Applicators involved in the fumigation of animal burrows must wear respiratory protection during the course of the operation. This would eliminate the residential uses of aluminum and magnesium phosphide but would allow for rodent control to continue under other circumstances. In cases of public health, where no other alternatives can be found, exceptions to this item may be made.

xii. Notification of Local Residents

The Agency believes that it is important to notify local residents near fumigated

structures. Notification is required so that residents in adjoining properties can make decisions regarding temporarily leaving their property during fumigation. Such notification is also required for commercial and industrial sites that are near a planned fumigation operation. The Agency proposes that the certified applicator ensure that all residents within 500 feet of the fumigated structure.

xiii. Requirement for Improved Training for Certified Applicators

Although current labels state the need for applicators to have training in phosphine fumigation, existing training programs appear insufficient given the high incident rate. The registrants must work with the appropriate personnel in the Agency and in the States to develop a fumigator-specific certification program that adequately addresses all risks associated with the use of these chemicals. These programs will stress the highly toxic nature of the chemicals, fumigation/aeration-specific issues, and the importance of understanding and following label language exactly. Also, the new requirements contained in this RED, and those requirements that result from the outcomes of the stakeholder meetings, must be emphasized. This effort must also include consideration of the most effective method of delivering this training. Redefine physical presence

xiv. Monitoring Methods to Minimize Exposure

The Agency is requiring additional monitoring of areas around fumigated structures in order to reduce the potential for occupational and residential bystander exposure to phosphine. The Agency is further requiring that no fumigated structure be entered until it can be verified that the concentrations of phosphine present are at or below the 0.03 ppm standard unless appropriate PPE is worn. A certified applicator or other competent person (industrial hygienist etc.) must conduct the monitoring. All fumigation/aeration operations are covered by this requirement including outdoor operations.

The Agency recognizes that current technology is not capable of detecting phosphine at the 0.03 ppm level. Therefore, the best available technology must be used with the limit of detection acting as the standard until new technology becomes available at which time the 0.03 standard will be required. The Agency is aware of "real-time" direct-read device technologies with a limit of detection of 0.05ppm that are currently available. These devices can be equipped with audible alarms and data loggers.

Further, there is evidence that the human sense of smell can "detect" phosphine at 0.02 ppm levels (See also ix). In cases where an employee smells the gas it will be assumed that the concentrations are above the standard and proper precautions/actions taken. Under no circumstances should a person consider smell as a monitoring option in lieu of device monitoring.